## Mathematics, Grade 8

### G1A8

Two sides of a triangle measure 5 and 12. Which is **not** true?

A.   A right triangle having these two sides can be formed.
B.   A non-right triangle having these two sides can be formed.
C.   It is possible to form a triangle having these two sides if the triangle's longest side measures 18.
D.   It is possible to form a triangle having these two sides if the triangle's longest side measures 12.

D1C8

A particular cell phone plan costs $15 per month plus 5 cents per minute for each minute of calling time beyond 100 minutes per month. Select the graph that represents this situation.
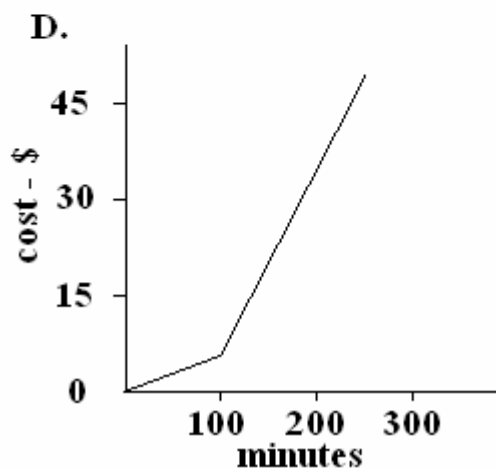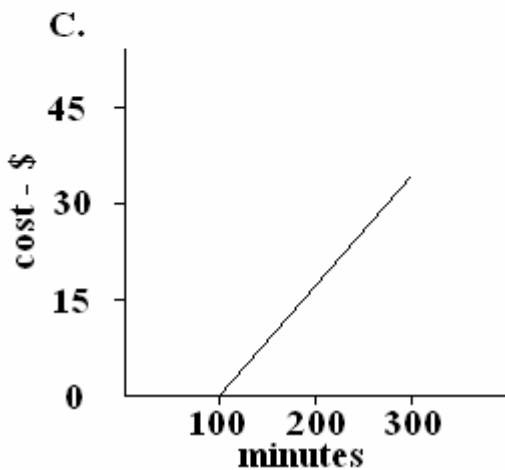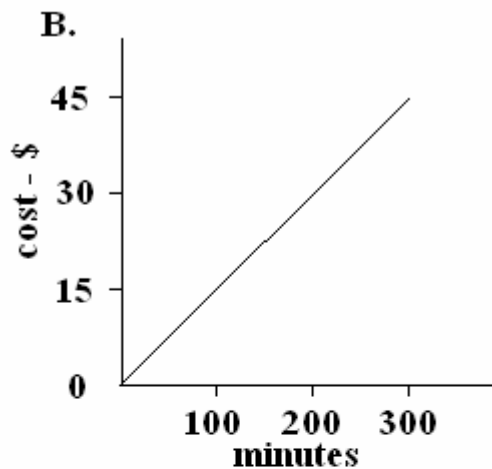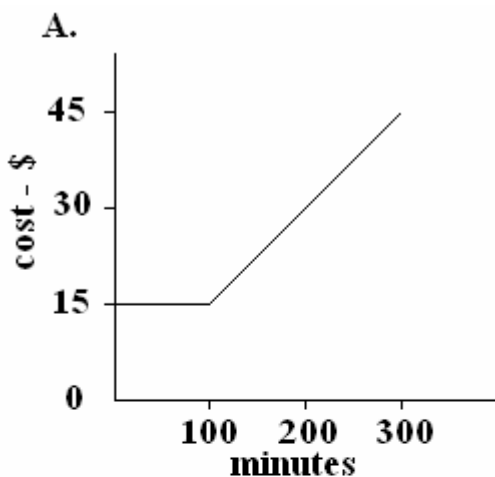
A3A8

In a particular triangle, one side is twice the length of the shortest side. The third side of the triangle is 4 inches longer than the shortest side. Which equation represents the perimeter of this triangle if n is the length of the shortest side in inches?

    A.   perimeter = $n + 2n + 2n + 4$
    B.   perimeter = $n + 2n + n + 4$
    C.   perimeter = $n + 2 + 2n + 4n$
    D.   perimeter = $n + 2n + 4n$

A4A8

Webster found this equation and table in his algebra book:

$y = 2x + 3$

x	y
1	5
2	7
3	9
4	11

What are the y-intercept and slope of the line represented by this data?

    A. y-intercept = 0; slope = 2
    B. y-intercept = 3; slope = 1
    C. y-intercept = 2; slope = 3
    D. y-intercept = 3; slope = 2

A2A8

A plumber charges a $25 service fee plus $39.50 per hour to work on plumbing in a house. Which equation represents the total cost, C, for the plumber's service if he works h hours?

    A. $C = 39.50 + 25h$
    B. $h = 39.50C + 25$
    C. $C = 64.50h$
    D. $C = 25 + 39.50h$

G3C8

Which statement is **not** true?

- A. A square has more rotational symmetries than an equilateral triangle.
- B. A square has more rotational symmetries than a non-square rectangle.
- C. A square has more rotational symmetries than a regular hexagon.
- D. A square has as many rotational symmetries as it has lines of symmetry.

A1B3

A math class studying patterns conducted a paper folding experiment. Students folded a piece of paper in half and noted how many sections resulted from the fold. They continued folding the paper in half, noting the number of sections that resulted from each new fold, and compiled their data in this chart:
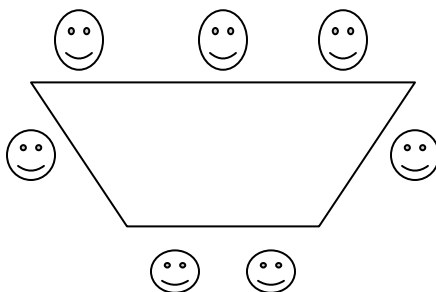
Number of folds	0	1	2	3
Number of sections	1	2	4	8

Which graph shows the correct pattern for this experiment?
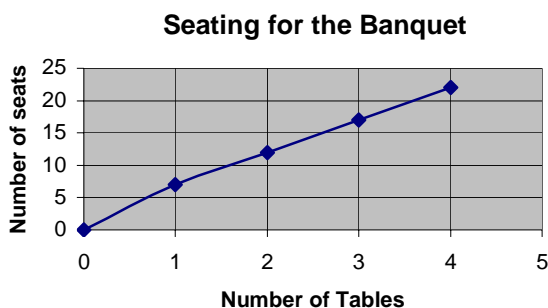
A.

B.

C.

D.
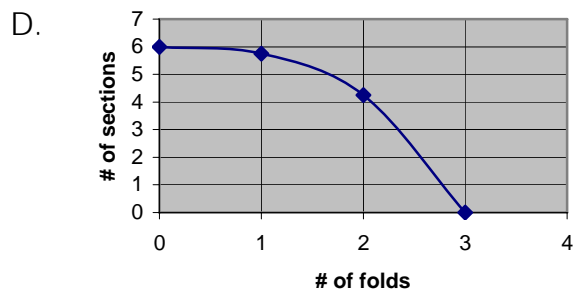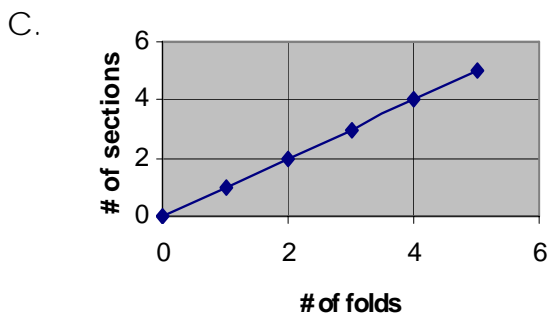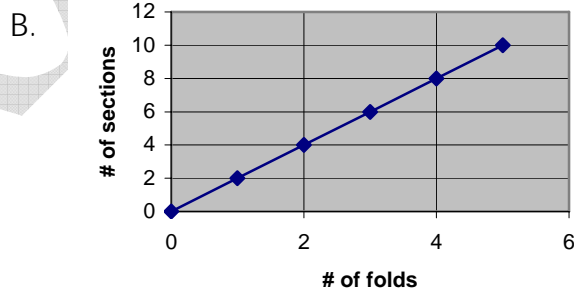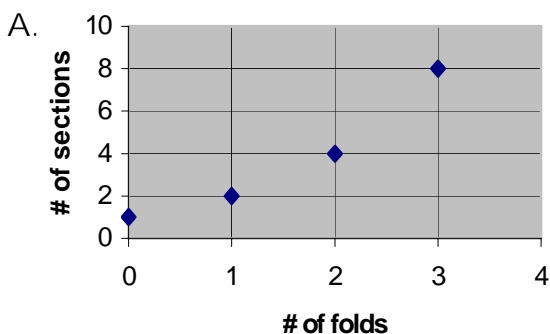
A1B8

The tennis team is planning its annual banquet. The tables in the room are trapezoids. Each table can seat 7 people, as shown.

However, the team plans to place the tables end-to-end, as shown:

The graph shows the number of people who can be seated within this table arrangement when using different numbers of tables:

Seating for the Banquet

Which most accurately describes the pattern shown in the graph?

A. Multiply the number of tables by 7 to get the number of seats.
B. If T = the number of tables and S = total seats, then $S = 2 + 5T$.
C. If T = the number of tables and S = total seats, then $S = T + 5$.
D. Multiply the number of tables by 6, and then add 7 to that total.

A2B8

How many of these expressions are equivalent to $3a + 6$?

$2a + 4 + a + 2$ $3(a + 6)$ $(a)(a)(a) + (2)(3)$ $6a + 3$

A.   0
B.   1
C.   2
D.   3

A3A8

A special pizza deal allows you to buy the first pizza for $12 and then every additional pizza for $6. Write an equation to represent the cost c of n pizzas? Explain your answer.

Equation: _____

G1A8

In the video game *Pythagoras and the Incline of Doom*, the character named Hypasus is trying to go up the dangerous incline. In this game, each character wears a power belt that contains power points. Each power point that the character has allows him to move up one foot on the incline. At this point in the game, he is at the bottom of the incline.

How many power points does Hypasus need to get all the way up the incline? Use the Pythagorean Theorem to help you reach your conclusion.
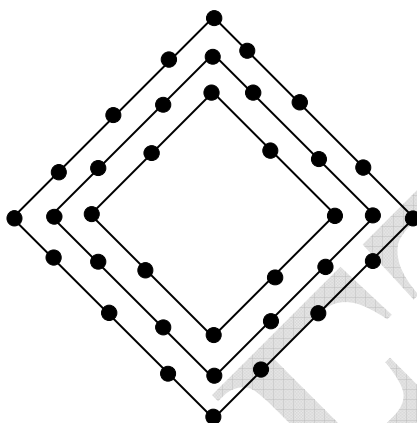
20 feet

30 feet
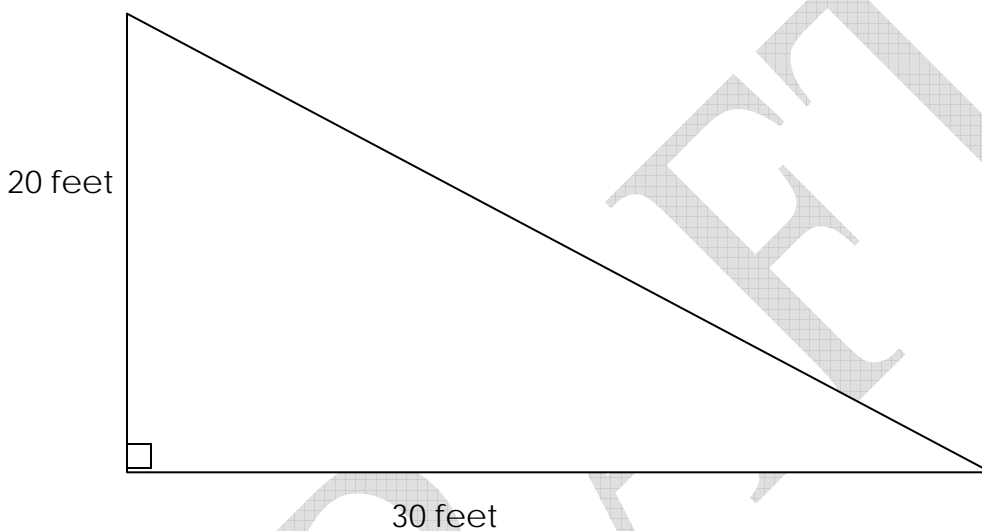
Show your work that supports your answer.

Number of Power Points Hypasus needs: _____

A1B8

The school marching band has a maneuver for its half-time show that uses a diamond formation. Mr. Kim, the band leader, sketched this diagram to show the band what the formation will look like on the field. Each dot represents one student.

Starting with the innermost diamond, Mr. Kim labeled them diamond 1, diamond 2, diamond 3, and so on.

Create a table or chart for the first 5 diamonds in the series that shows the number of students in each diamond.

Write an expression that will give the number of students in any number of diamonds.

_____

G2A8

Given that the points (1, 1) and (1, 5) are *corners* of a square, what two sets of coordinates could be graphed to form the other two corners of the square?
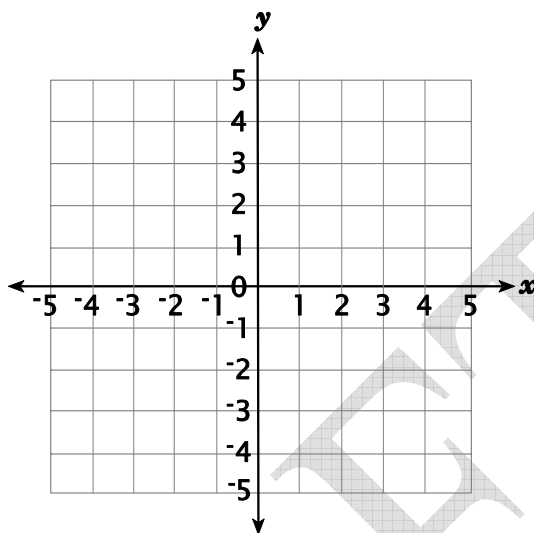
Corner: _____   Corner: _____

A.   Look at the Input/Output table below. Use numbers or words to write a rule that states what happens to the number in the Input column to get the number in the Output column.

Input	Output
2	8
3	10
4	12
7	18

Rule: _____

B.   Use your rule to find the Output if the Input is 100. Show your work.

G1B8

Jamal had budgeted $700 to carpet a cabin he was building. Then he decided that he could afford to build a cabin that was twice as long and twice as wide. Because the dimensions were now two times those originally planned, Jamal estimated that the carpet would cost twice as much.

When he went to buy the carpet, however, the price was **not** $1,400. Explain Jamal's mistake **and** calculate the estimated cost of the carpet needed to cover his cabin.

G1A8

Jason needs to nail two diagonal boards onto a 5' × 6' gate for reinforcement. How long of a board will he need to buy to be able to cut both boards for the reinforcement? Show the work that shows how you arrived at your answer.

5 feet

6 feet
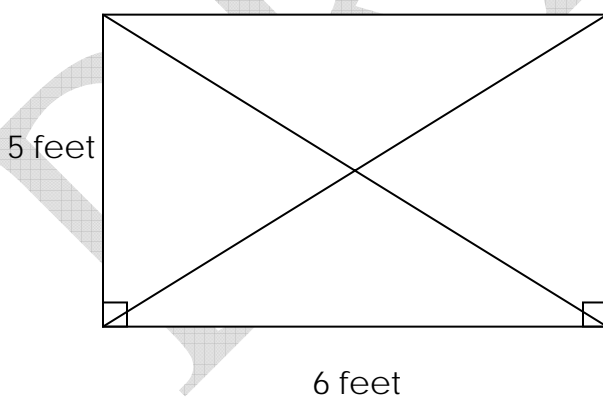
A1B8

Perry's teacher put the following chart on the board:

Number of Banquet Tables	Perimeter of Figure Composed of These Tables
1	5
2	12
3	19
4	26
5	33

According to the pattern shown in the chart, what expression can be used to find the perimeter for any number of tables?

Expression: _____

What is the perimeter of a figure composed of 100 tables? _____